

# Delineation of Regional Ecosystems

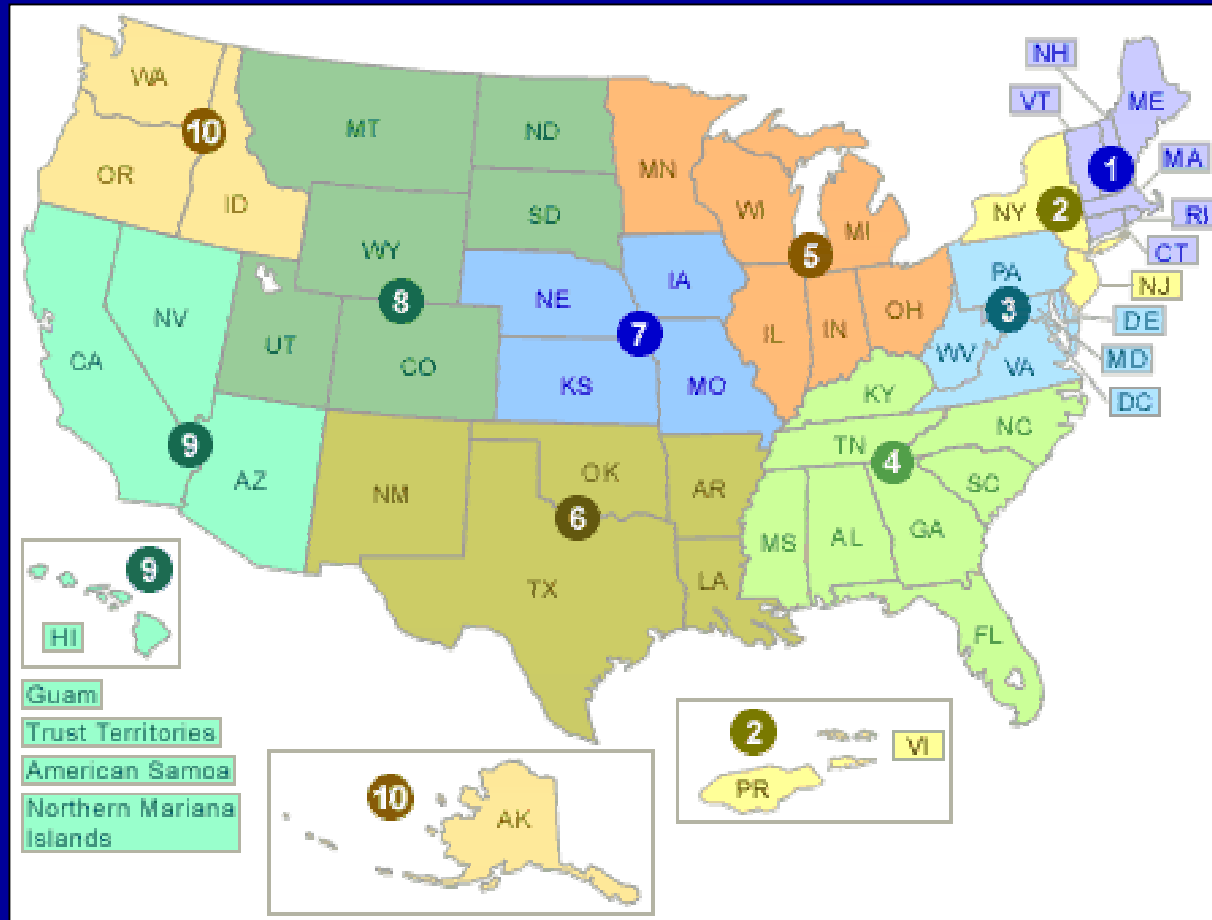
Pace Wilber, NOAA

August 31, 2004

# Reorganization Act (P.L. 91-5 6)

- “I have therefore issued a directive which streamlines the field operations of five agencies by establishing, for the first time, common regional boundaries and regional office locations.”
- “I am asking all other Federal agencies to take note of these instructions, and I am requesting that any changes in their field organization structures be made consistent with our ultimate goal: uniform boundaries and field office locations for all social or economic programs requiring interagency or intergovernmental coordination.”
- Source: The Public Papers of the Presidents, Richard Nixon, March 27, 1969, #134

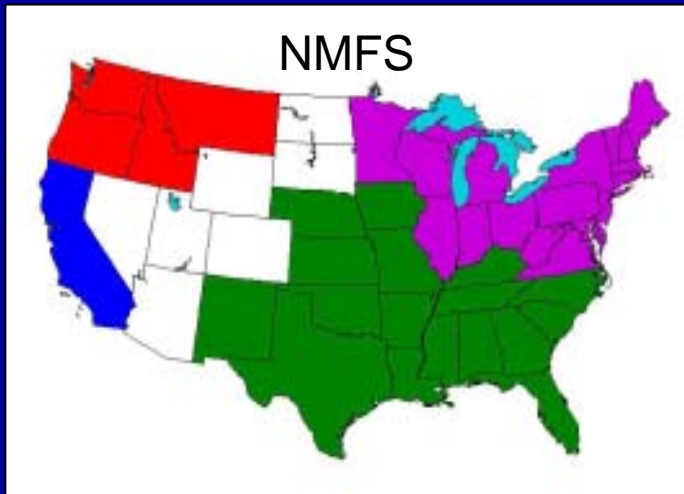
# US Environmental Protection Agency



# NOAA Fisheries and USFWS

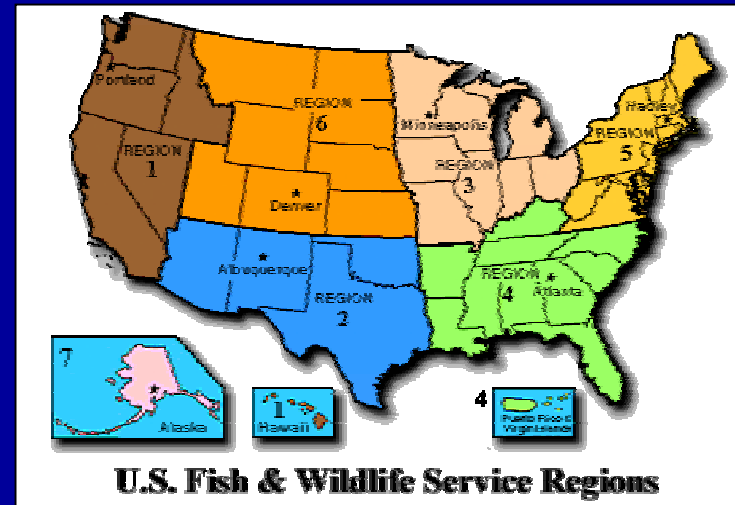
## *Purpose*

- Provide regional management of national resources



## *Criteria*

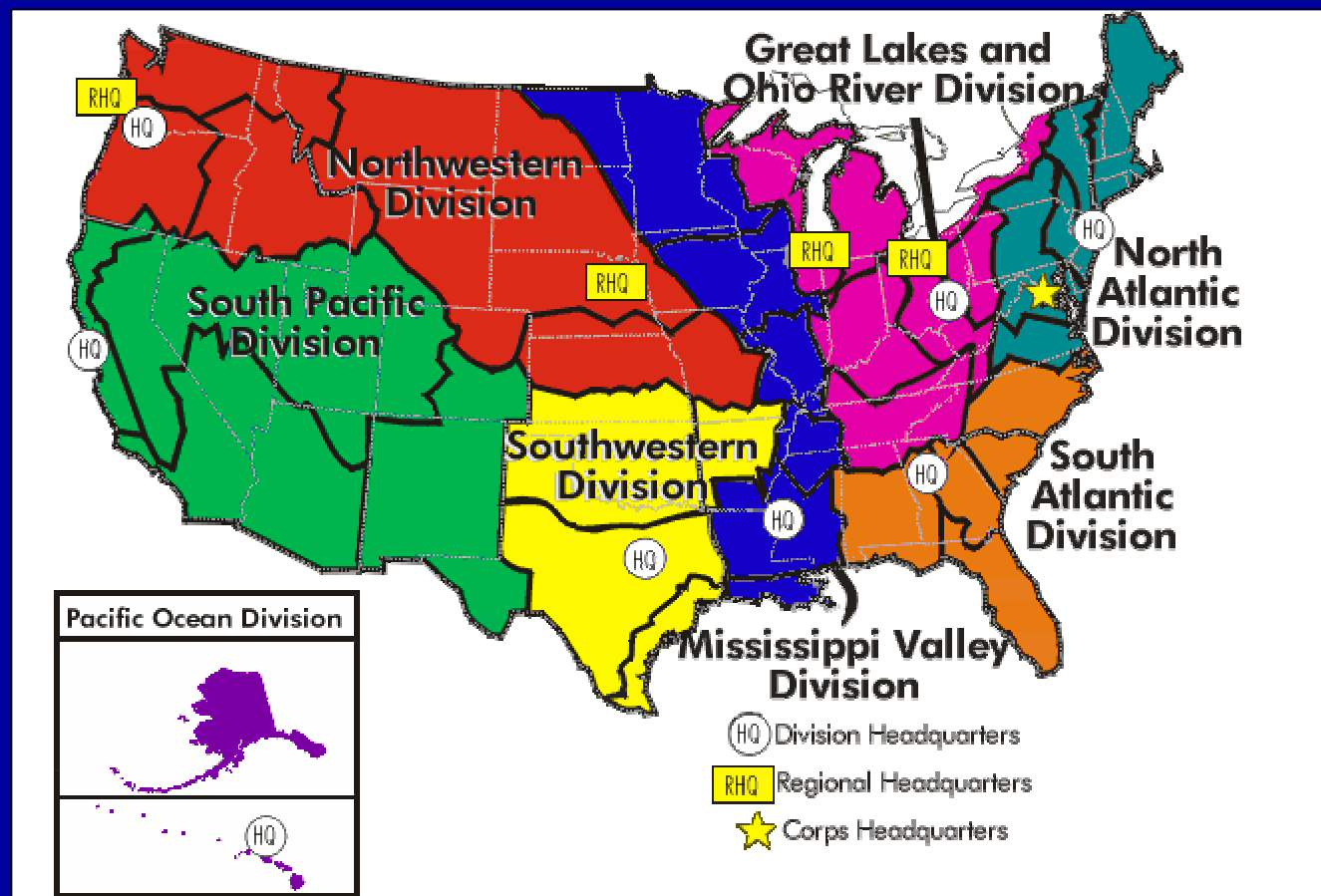
- Political
- Geographic proximity



# Fishery Management Councils



# US Army Corps of Engineers: Divisions and Districts

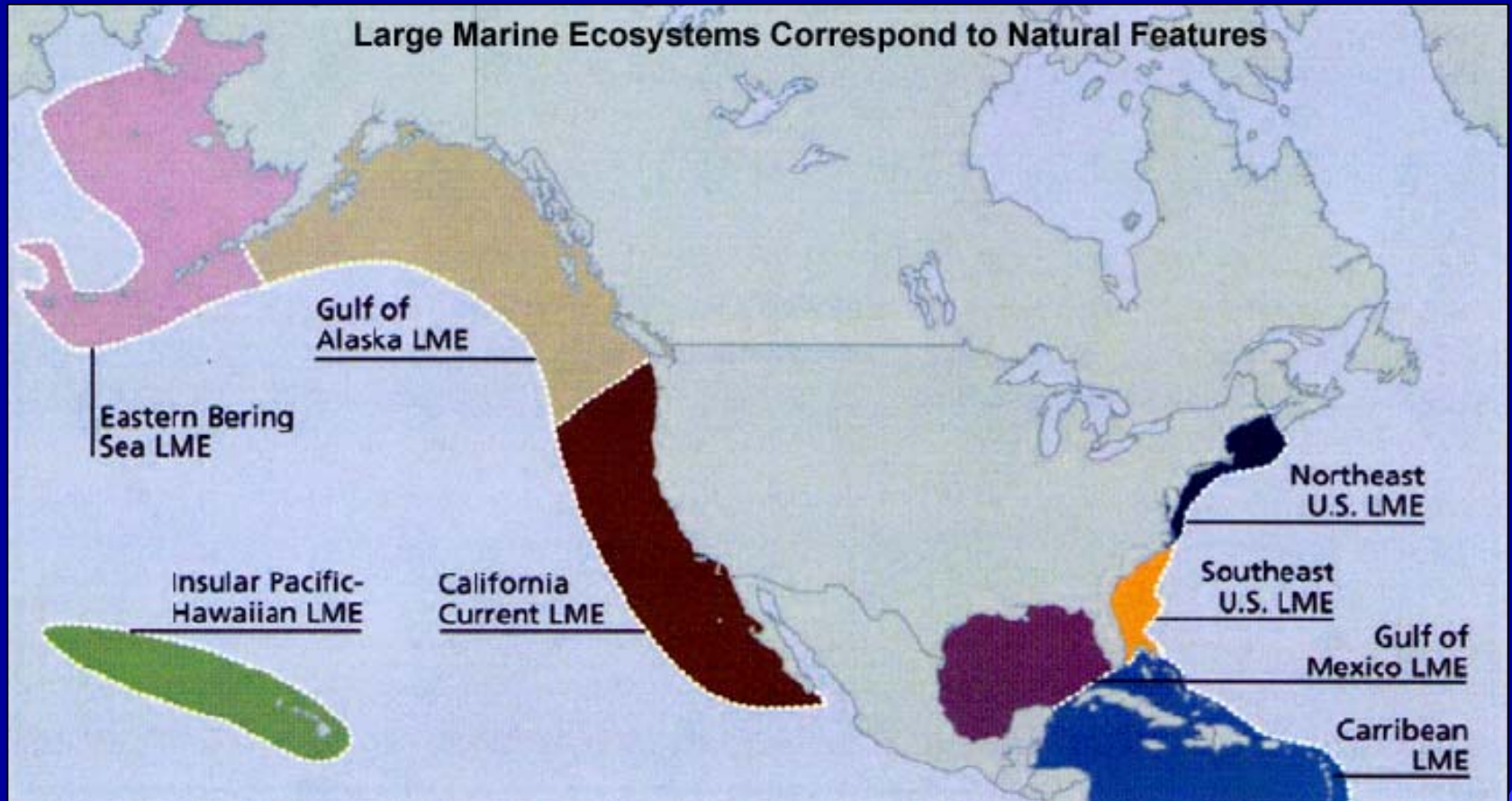


# Large Marine Ecosystems





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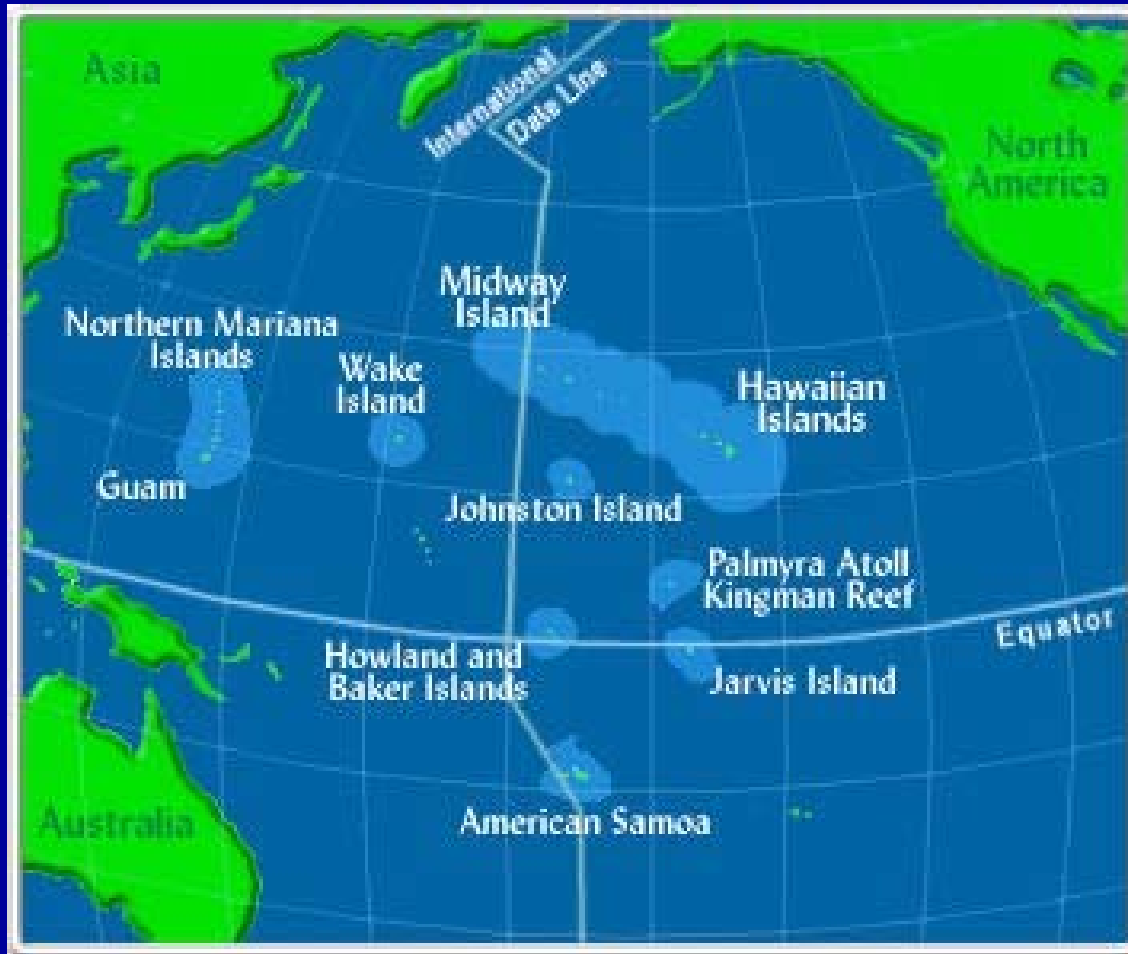
## ***Purpose***

- Useful to ecosystem-based projects
- Modules support transboundary diagnostic analysis (TDA) and strategic action plan (SAP) development

## ***Criteria***

- Bathymetry
- Hydrography
- Productivity
- Trophic Interactions

# LME's in the Western and Central Pacific



# National Estuarine Research Reserves: Biogeographic Regions (15CFR921)



# NERRS Biogeographic Regions

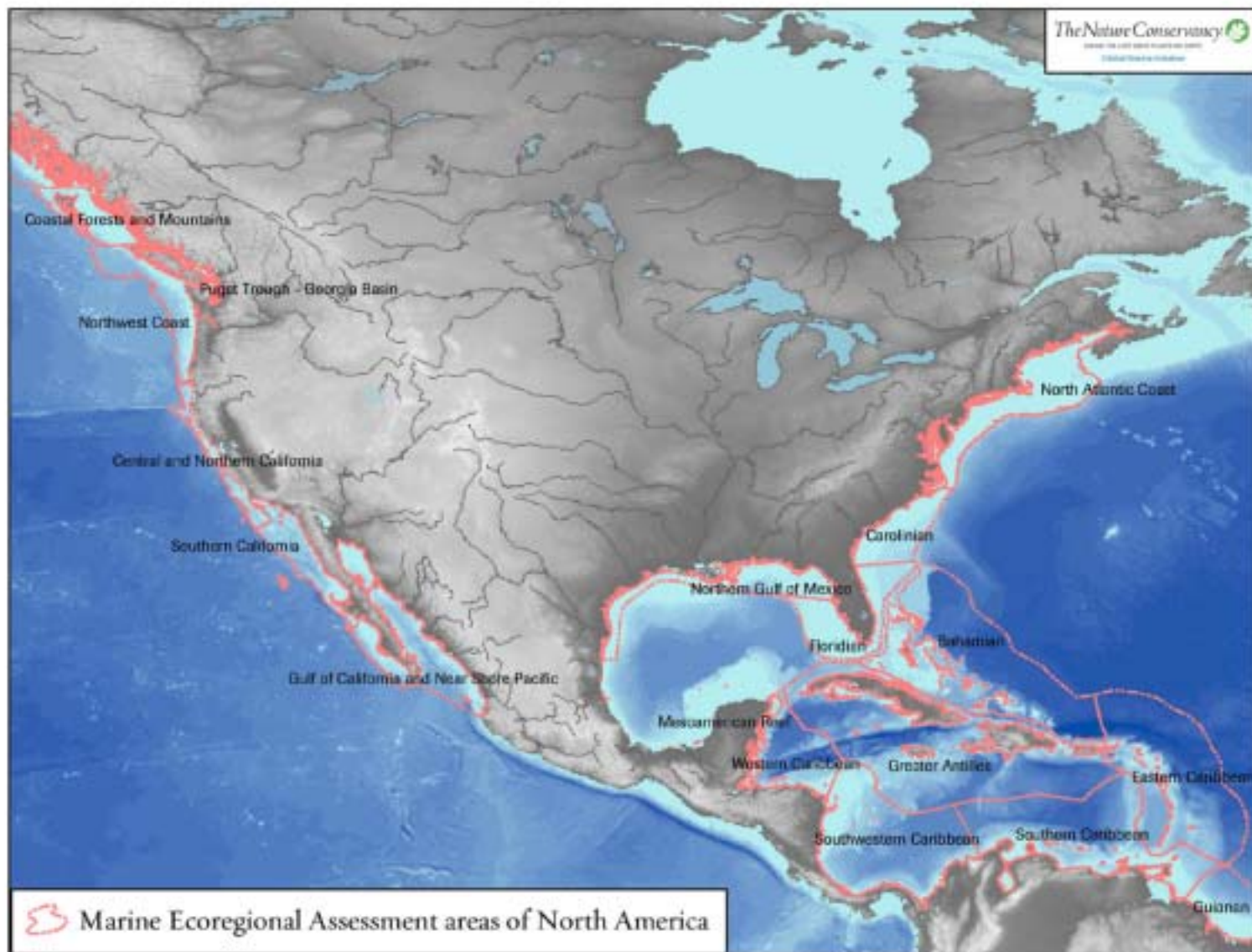
## ***Purpose***

- Research representative estuary ecosystems in all biogeographic regions of the U.S.

## ***Criteria***

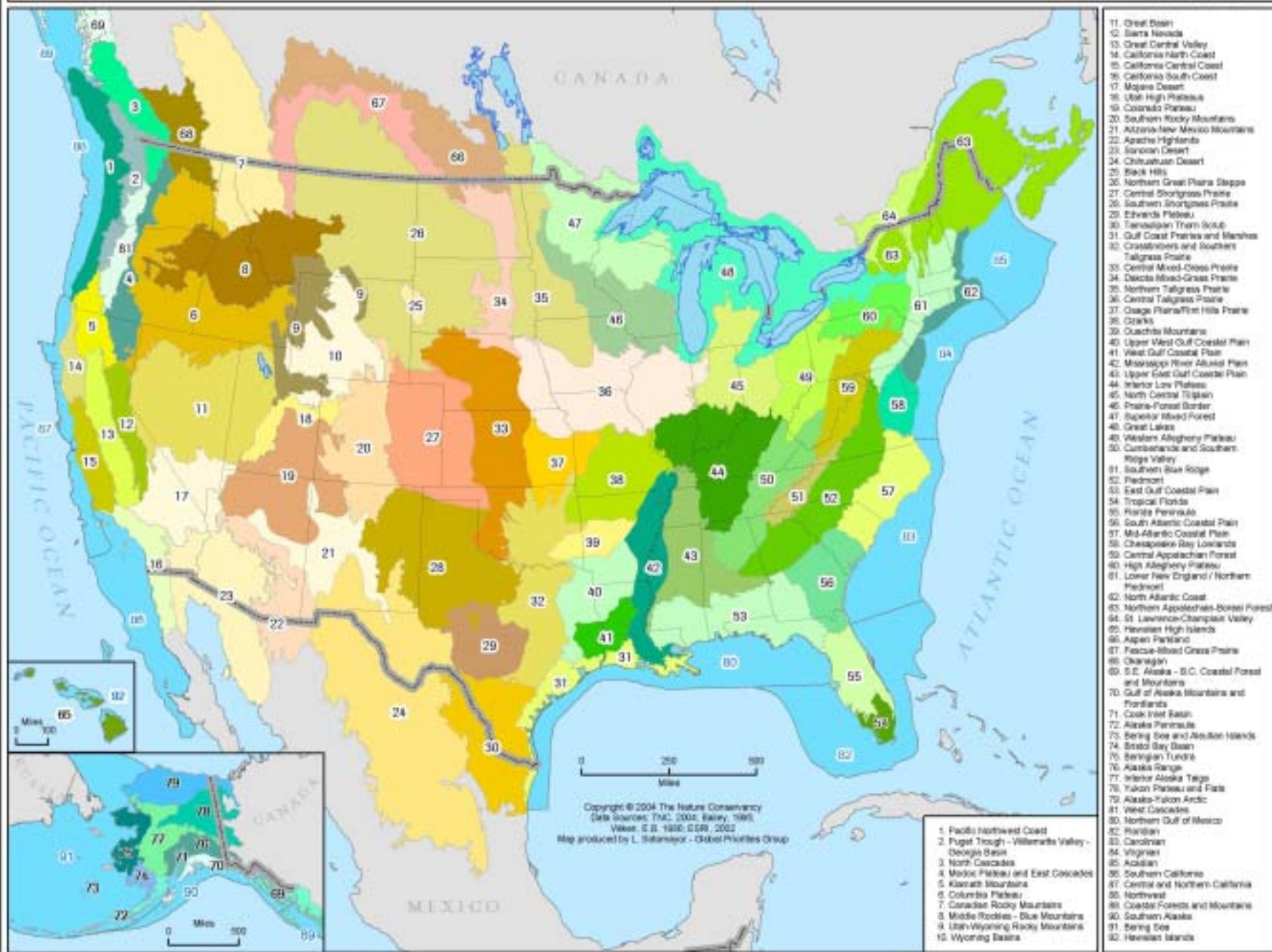
Coastal zone characteristics

- Terrestrial
- Estuarine
- Nearshore



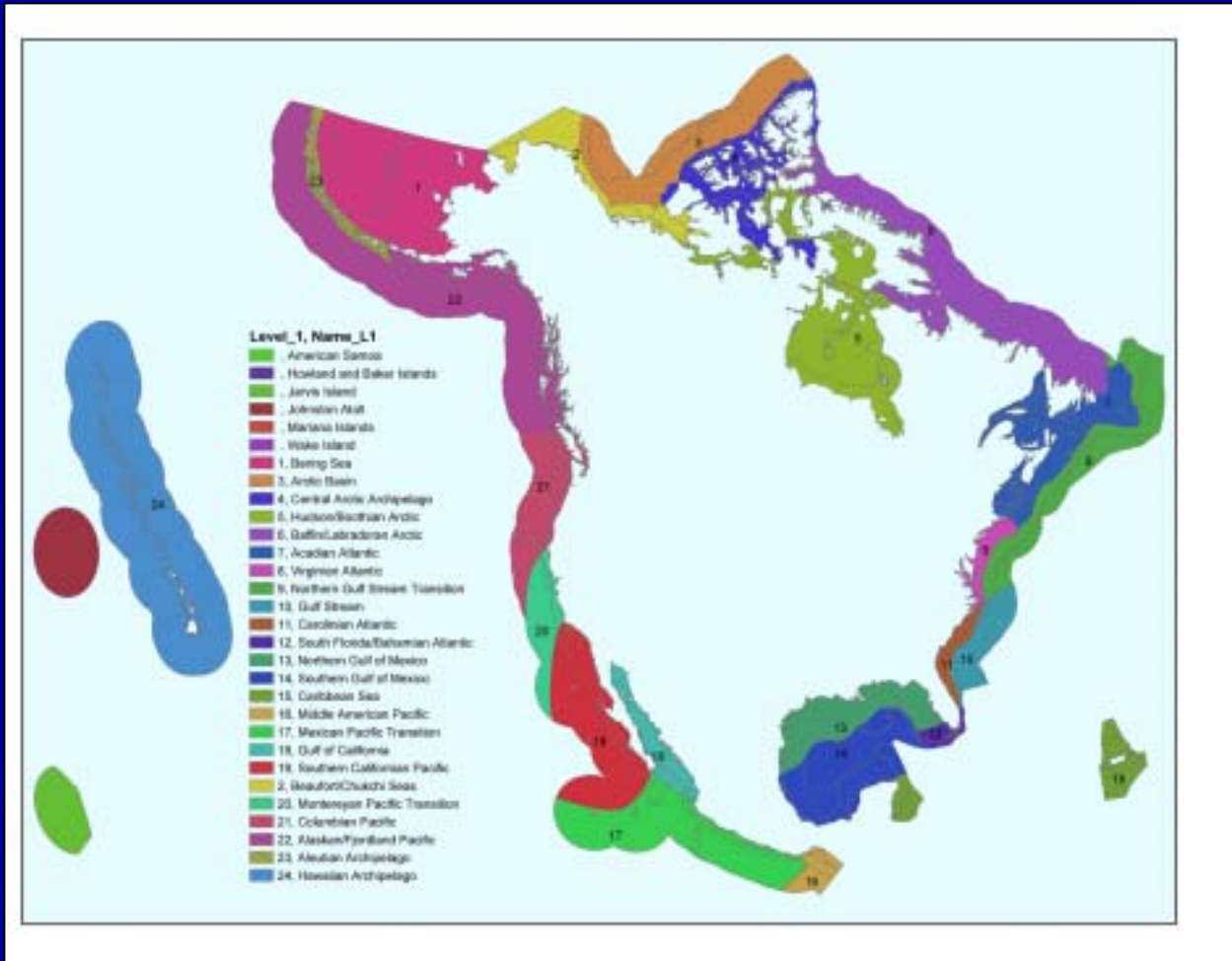


# Terrestrial and Marine Ecoregions of the United States



# NA Commission on Environmental Cooperation

## Marine Ecoregions, Level 1





# North American Marine Ecoregions (CEC)

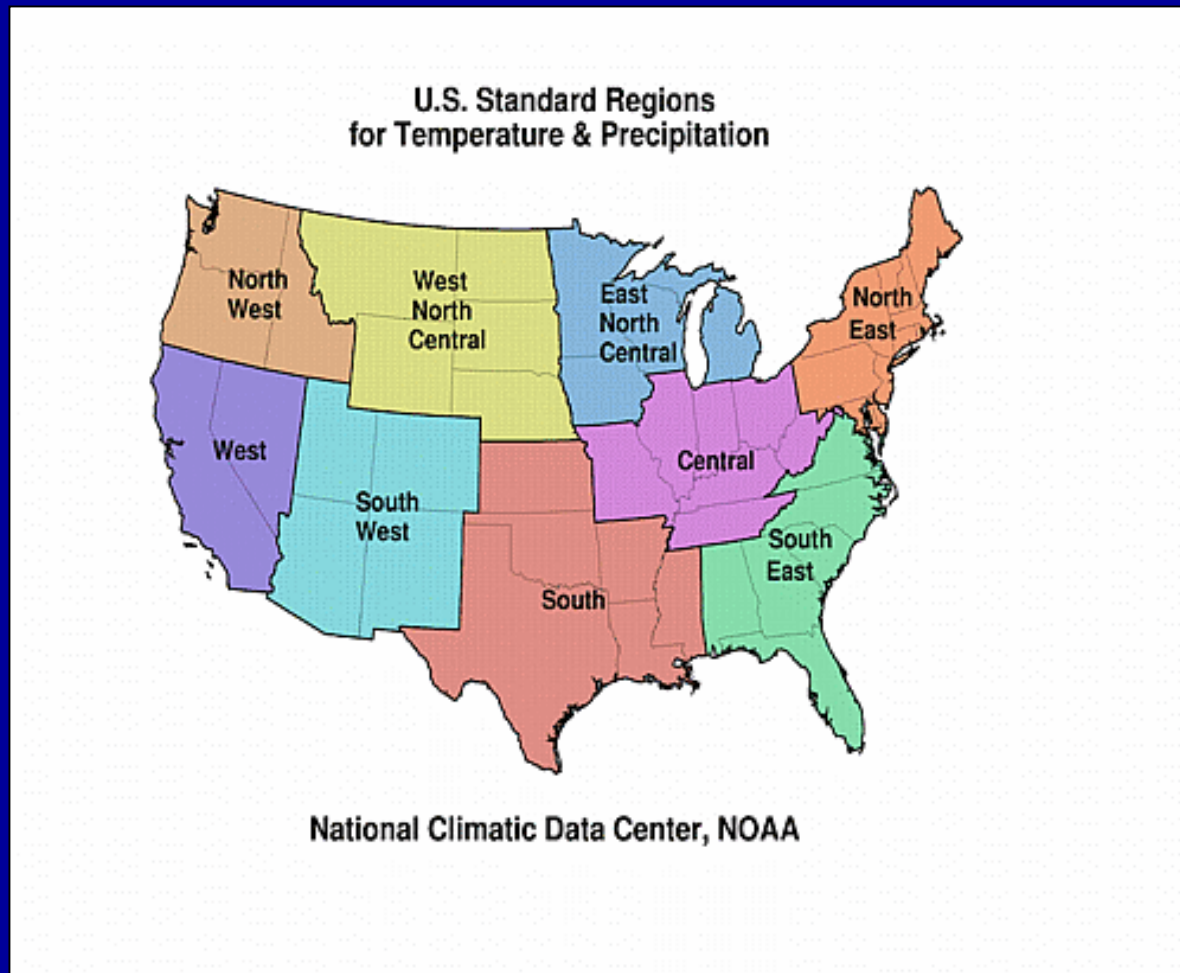
## ***Purpose***

- Address regional concerns
- Prevent trade and environmental conflicts
- Promote enforcement of environmental law

## ***Criteria for Level 1***

- Large water masses
- Major currents
- Large enclosed seas
- Sea surface temperature
- Faunal distribution

# NOAA National Climatic Data Center: Regions & Coastal Climatologies



# IOOS Regions



# Integrated Ocean Observing Systems

## ***Purpose***

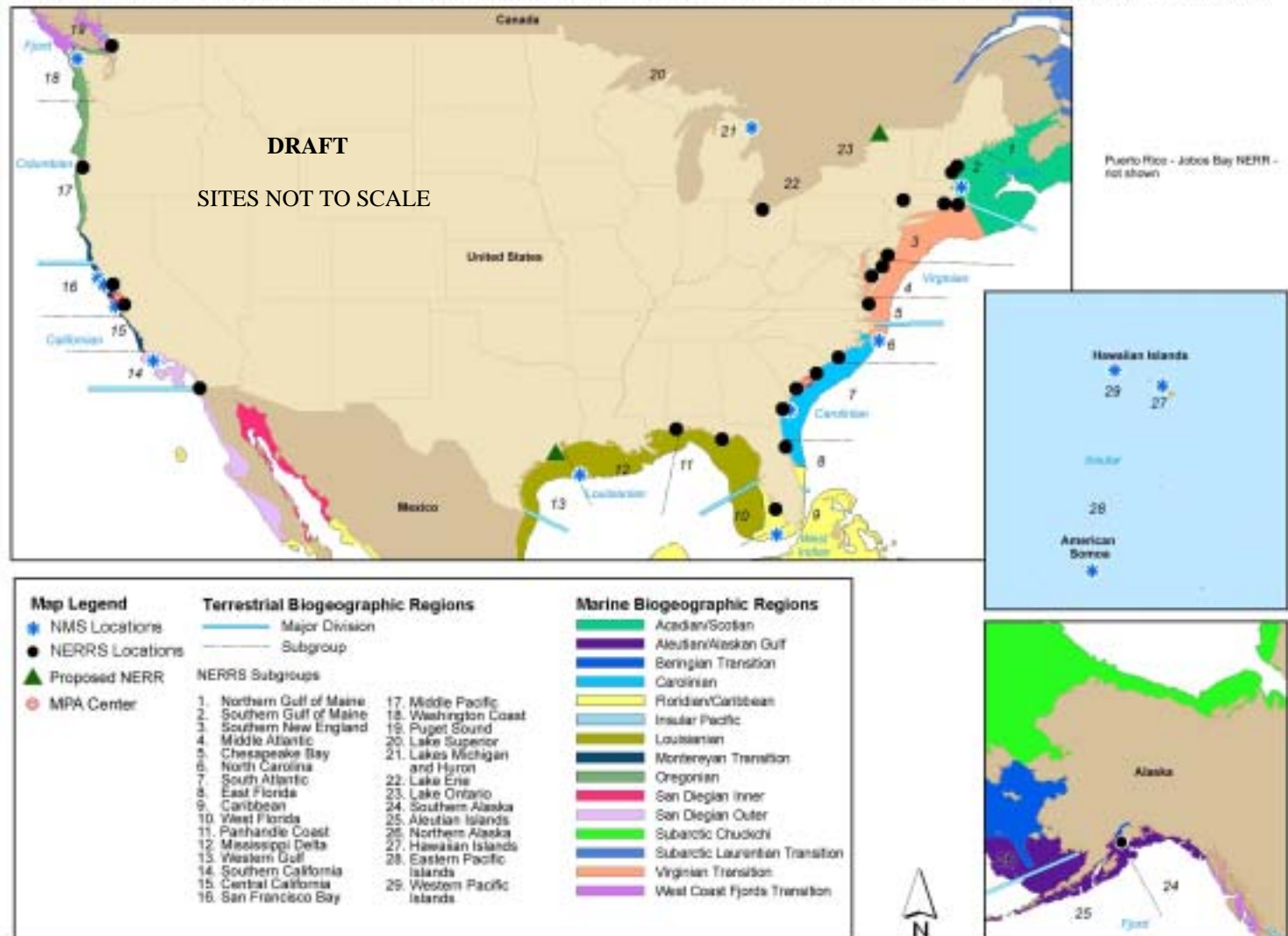
- Provide data on oceans, EEZ, and estuaries.
- Coordinate observing and prediction systems.

## ***Criteria***

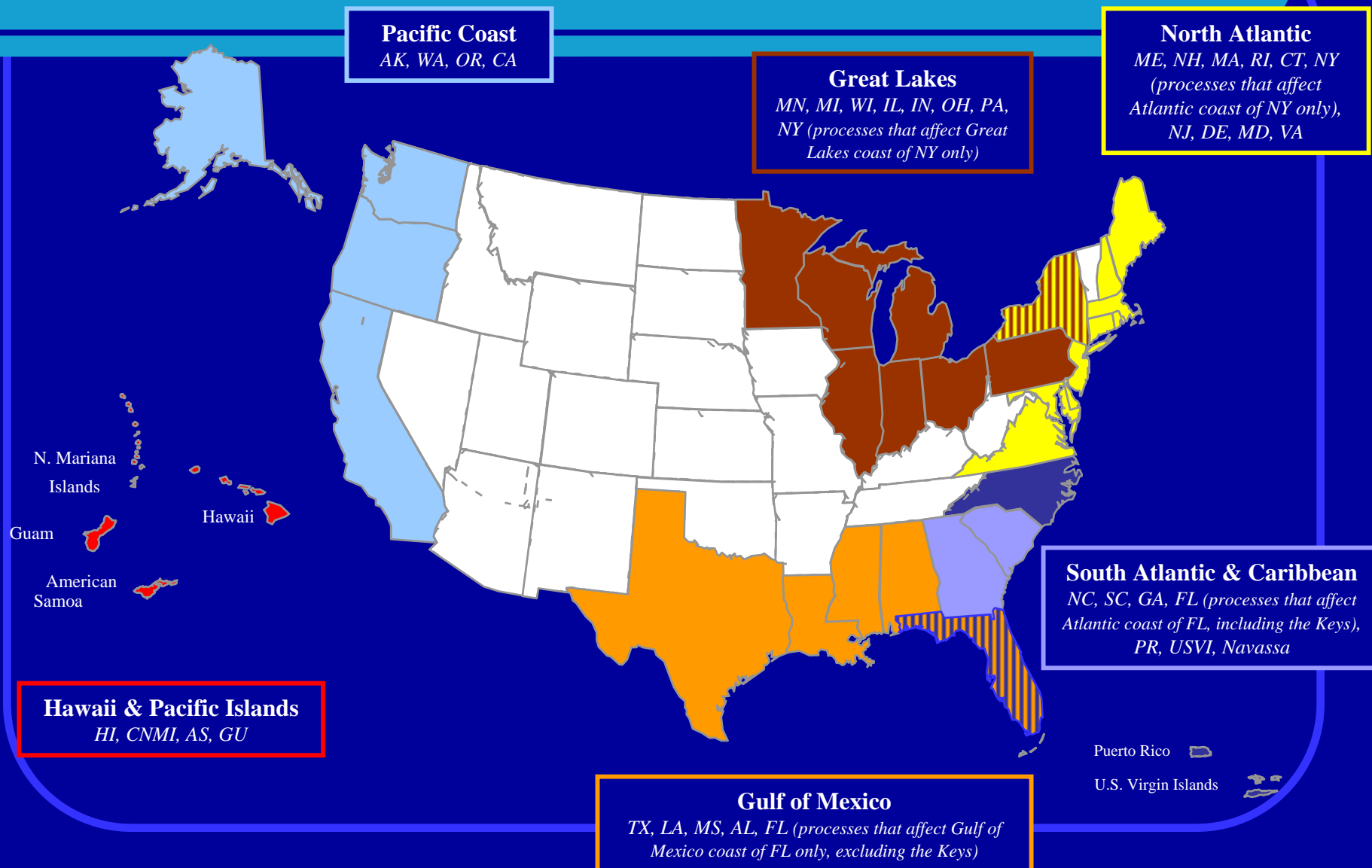
- Exact boundaries currently being defined.
- User groups will play a role in the design of system.
- Boundaries will be fixed for admin. purposes.
- Boundaries will vary spatially for detection/prediction purposes.

# Marine Protected Areas (39) and National/Regional Centers (FY2006 PPBS Process)

Locations of National Estuarine Research Reserves, National Marine Protected Areas Centers, and National Marine Sanctuaries



# MPA Recommendation 2: 6 Regions



# Regional Ecosystems Based on LME's / Practical Considerations

- Geographic range of species (from sedentary to highly migratory)
- Scale and importance of species interactions
- Oceanographic processes/regimes
- Political geography
- Effects of human activities
- Spatial discontinuities
- Oceanographic regime discontinuities



# Analysis of Important Criteria to Consider:

## Physical

### Bathymetry

### Hydrography

- Water mass characteristics
- Temperature

### Other

- Bottom composition
- Water depth

# Analysis of Important Criteria to Consider:

## Biological

Productivity

Trophic interactions

Patterns of  
biogeography

- species richness
- endemism

Structure of patterns

Breaks in  
productivity

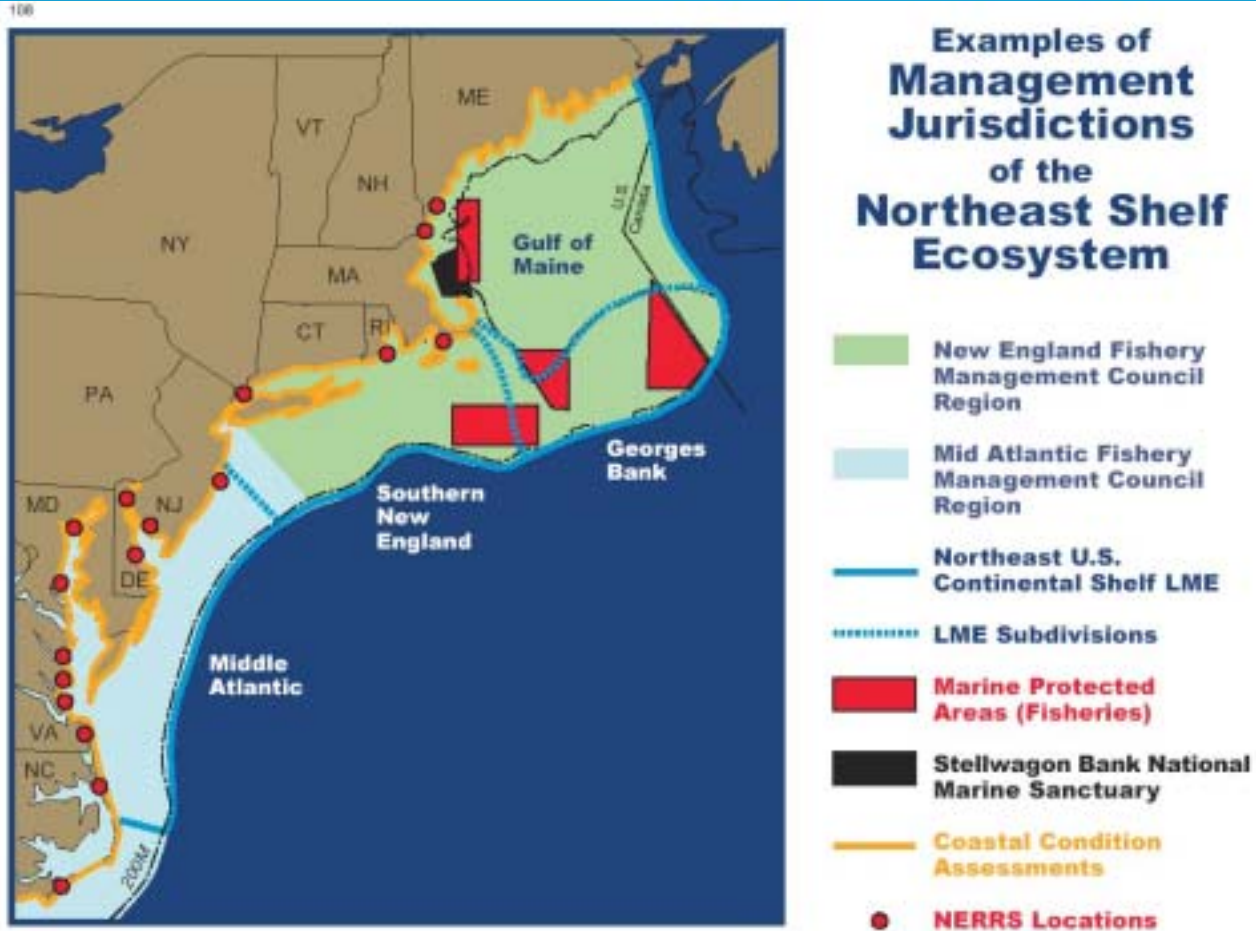
- Primary productivity
- Growth rates of species
- Recruitment retention areas

## Analysis of Important Criteria to Consider: Non-scientific

Collaborating mechanisms

Number of collaborators

# Sub-areas of the Northeast LME



# National Climate Data Center (NCDC) Regions

## ***Purpose***

- Manage global climate information.
- Gather and provide information on regional, state, and sub-state levels.

## ***Criteria***

Areas of similar climate regime

- Temperature
- Precipitation

# Ocean Commission Information Programs

## ***Purpose***

Regional ecosystem assessments

- Inventory
- Evaluation of attributes
- Baseline ecosystem health
- Enhance decision-making ability

## ***Criteria***

Not listed in Preliminary Report

# Private Sector

## ***Resilience Alliance***

Social-ecological system comprised of:

- Ecosystem
- Resource users
- Governance structure
- Institutions
- Public infrastructure

## ***The Nature Conservancy***

Marine Ecoregional Plans

- Northern Gulf of Mexico
- Pacific Northwest
- Southern California
- Mid-South Atlantic



# Fishery Management Councils

## ***Purpose***

- Manage living marine resources in the council region

## ***Criteria***

- Geopolitical concerns  
(not ecological)

# Additional Slides

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# Analysis of Important Criteria to Consider:

## Biological

Productivity

Trophic interactions

Patterns of  
biogeography

- species richness
- endemism

Structure of patterns

Breaks in  
productivity

- Primary productivity
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# Regional Delineation Schemes

- Political

- EPA, USFWS, NMFS, FMC regions, Coastal states

- Coastal focused

- TNC Marine Ecoregional Planning, NA CEC, NERR
- CAF (EDA/CDA), HUC, USACE, EPA Ecoregions

- Offshore, Marine focused

- LME → Estuary → Drainage basin
- Biogeochemical Provinces (Longhurst 1998)